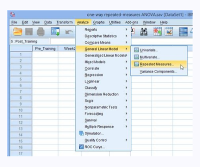
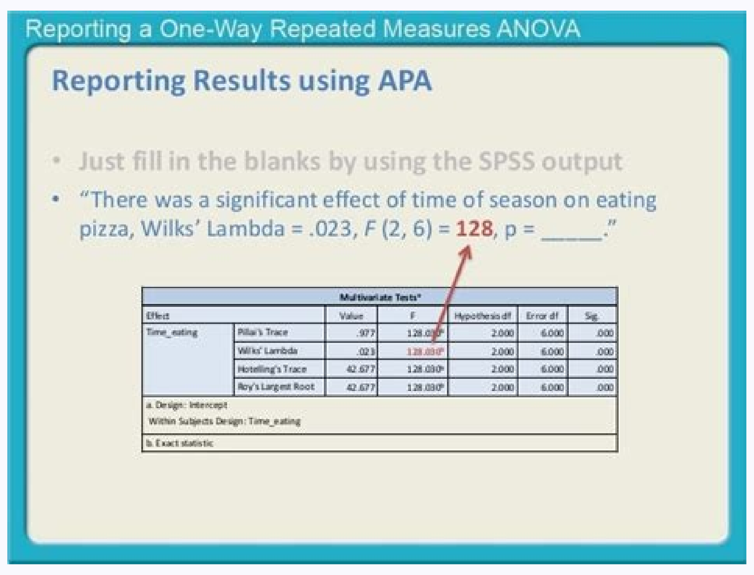
# One way repeated measures anova reporting results

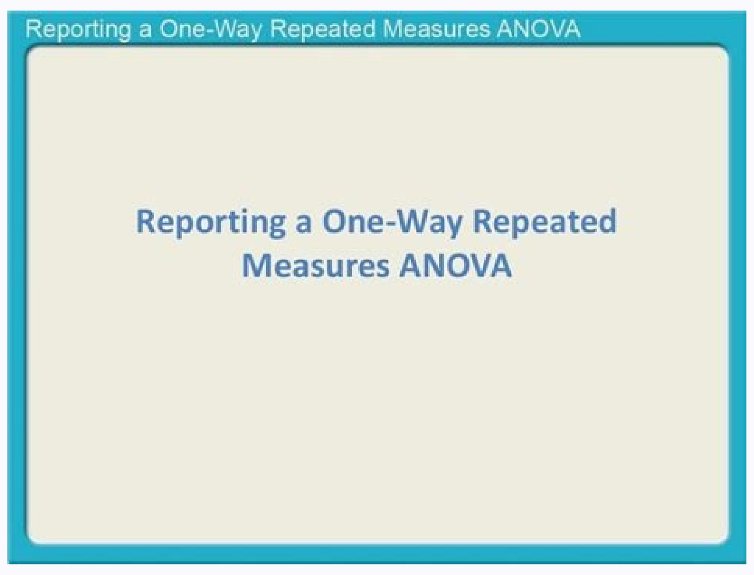
I'm not robot!

| Source | Df | F | P | Partial Eta² |
|---|---|---|---|---|
| Greenhouse-Geisser Correction | 3.121 | 260.208 | .000** | .847 |

*P< .05






| | Source | Type III Sum of Squares | df | Mean Square | F | Sig. | Partial Eta Squared |
|---|---|---|---|---|---|---|---|
| Chapters | Sphericity Assumed | 1574.21 | 4 | 393.55 | 11.89 | .00 | .38 |
| | Greenhouse-Geisser | 1574.21 | 2.35 | 669.85 | 11.82 | .00 | .38 |
| | Huynh-Feldt | 1574.21 | 2.70 | 582.43 | 11.82 | .00 | .38 |
| | Lower-bound | 1574.21 | 1.00 | 1574.21 | 11.82 | .00 | .38 |
| Error(Chapters) | Sphericity Assumed | 2515.20 | 76 | 33.09 | | | |
| | Greenhouse-Geisser | 2515.20 | 44.65 | 56.32 | | | |
| | Huynh-Feldt | 2515.20 | 51.34 | 48.97 | | | |
| | Lower-bound | 2515.20 | 19.00 | 132.39 | | | |

How to report one way repeated measures anova. How to report one way anova results. What is a one way repeated measures anova. How do i report one way anova results.

A repeated measures ANOVA is used to determine whether or not there is a statistically significant difference between the means of three or more groups in which the same subjects show up in each group.. When reporting the results of a repeated measures ANOVA, we always use the following general structure: A brief description of the independent and dependent variable. The overall F-value of the ANOVA and the corresponding p-value. Here's the exact wording we can use: A repeated measures ANOVA was performed to compare the effect of [independent variable] on [dependent variable]. There [was or was not] a statistically significant difference in [dependent variable] between at least two groups (F(between groups df, within groups df) = [F-value], p = [p-value]). The following example shows how to report the results of a repeated measures ANOVA in practice. Example: Reporting Results of a Repeated Measures ANOVA Researchers want to know if four different drugs lead to different reaction times. To test this, they measure the reaction time of five patients on the four different drugs. Since each patient is measured on each of the four drugs, they use a repeated measures ANOVA to determine if the mean reaction time differs between drugs. The following table shows the results of the repeated measures ANOVA: Here is how to report the results: A repeated measures ANOVA was performed to compare the effect of a certain drug on reaction time. There was a statistically significant difference in reaction time between at least two groups (F(4, 3) = 18.106, p < .000). Things to Keep in Mind Here are a few things to keep in mind when reporting the results of a repeated measures ANOVA: Use a descriptive statistics table. It can be helpful to present a descriptive statistics table that shows the mean and standard deviation of values in each treatment group as well to give the reader a more complete picture of the data. Round p-values when necessary. As a general rule of thumb, you should round the values for the overall F value and any p-values to either two or three decimal places for brevity. No matter how many decimal places you use, be sure to be consistent throughout the report. Additional Resources The following tutorials explain how to report other statistical tests and procedures in APA format: How to Report Two-Way ANOVA Results (With Examples) How to Report Cronbach's Alpha (With Examples) How to Report t-Test Results (With Examples) How to Report Chi-Square Results (With Examples) How to Report Pearson's Correlation (With Examples) How to Report Regression Results (With Examples) You will be reporting three or four things, depending on whether you find a significant result for your 1-Way Within Subjects ANOVA 1. Test type and use You want to tell your reader what type of analysis you conducted. This will help your reader make sense of your results. You also want to tell your reader why this particular analysis was used. What did your analysis tests for? Example You can report data from your own experiments by using the template below. "A one-way within subjects (or repeated measures) ANOVA was conducted to compare the effect of (IV)_____________ on (DV)______________ in ________________, ________________, and ________________ conditions." If we were reporting data for our example, we might write a sentence like this. "A one-way within subjects (or repeated measures) ANOVA was conducted to compare the effect of beverage type on number of hours slept in caffeine, juice and beer conditions." 2. Significant differences between conditions You want to tell your reader whether or not there was a significant difference between condition means. You can report data from your own experiments by using the template below. "There was a significant (not a significant) effect of the IV __________, Wilks' Lambda = ____, F (___,___) = _____, p = _____. Just fill in the blanks by using the SPSS output Let's fill in the values. You are reporting the Wilk's Lamda value, the degrees of freedome (df), the F value (F) and the Sig. value (often referred to as the p value). Once the blanks are full... You have a sentence that looks very scientific but was actually very simple to produce. "There was a significant effect of beverage type, Wilks' Lambda = 0.10, F (2,3) = 13.42, p = .032." 3. Only if result of test was significant, report results of post hoc tests In the previous chapter on interpretation, you learned that the significance value generated in a 1-Way Within Subjects ANOVA doesn't tell you everything. If you find a significant effect using this type of test, you can conclude that there is a significant difference between some of the conditions in your experiment. However, you will not know where this effect exists. The significant difference could be between any or all of the conditions in your experiment. In the previous chapter, you learned that to determine where significance exists you need to conduct a series of paired samples t-tests to compare each condition with all other conditions. If you have an IV with 3 levels, like the one in this example, you would need to conduct and report the results of three additional paired samples t-tests. Remember that you are using the number 0.017 to determine statistical significance, rather than .05, because you are doing three tests instead of just one (05/3 = 0.017). Example Because we have found a statistically significant result in this example, we needed to compute three additional paired samples t-tests. We used one Paired Samples T-Test to compare just the caffeine and juice conditions. A second Paired Samples T-Test to compare just the caffeine and beer conditions. And a third Paired Samples T-Test to compare just the juice and beer conditions. The results of these three tests must be reported. In the paired samples t-test chapter, you learned how to report the results of such tests. Here's what the results of our three Paired Samples T-tests might look like. "Three paired samples t-tests were used to make post hoc comparisons between conditions. A first paired samples t-test indicated that there was a significant difference in the scores for caffeine (M=5.4, SD=1.14) and beer (M=9.4, SD=1.14) conditions; t(4)=-5.66, p = .005. A second paired samples t-test indicated that there was a significant difference in the scores for caffeine (M=5.4, SD=1.14) and juice (M=7.2, SD=1.10) conditions; t(4)=-4.881, p = .009. A third paired samples t-test indicated that there was no significant difference in the scores for juice (M=7.2, SD=1.10) and beer (M=9.4, SD=1.14) conditions; t(4)=-3.773, p = .02." 4. Report your results in words that people can understand Since it might be hard for someone to figure out what that sentence means or how it relates to your experiment, you want to briefly recap in words that people can understand. Try to imagine trying to explain your results to someone who is not familiar with science. In one sentence, explain your results in easy to understand language. Example You might write something like this for our example. "These results suggest that beverage type really does have an effect on hours of sleep. Specifically, our results suggest that when humans drink caffeine, they sleep significantly less than when they drink juice and when they drink beer. However, there is no real difference in hours slept when comparing juice and beer consumption." This sentence is so much easier to understand than the scientific one with all of the numbers in it. Let's see how this looks all together When you put the three main components together, results look something like this. "A one-way within subjects (or repeated measures) ANOVA was conducted to compare the effect of beverage type on number of hours slept in caffeine, juice and beer conditions. There was a significant effect of beverage type, Wilks' Lambda = 0.10, F (2,3) = 13.42, p = .032. Three paired samples t-tests were used to make post hoc comparisons between conditions. A first paired samples t-test indicated that there was a significant difference in the scores for caffeine (M=5.4, SD=1.14) and beer (M=9.4, SD=1.14) conditions; t(4)=-5.66, p = .005. A second paired samples t-test indicated that there was a significant difference in the scores for caffeine (M=5.4, SD=1.14) and juice (M=7.2, SD=1.10) conditions; t (4)=-4.881, p = .009. A third paired samples t-test indicated that there was no significant difference in the scores for juice (M=7.2, SD=1.10) and beer (M=9.4, SD=1.14) conditions; t (4)=-3.773, p = .02.. These results suggest that beverage type really does have an effect on hours of sleep. Specifically, our results suggest that when humans drink caffeine, they sleep significantly less than when they drink juice and when they drink beer. However, there is no real difference in hours slept when comparing juice and beer consumption." Looks pretty complicated but it is simple when you know how to write each part. Background | Enter Data | Analyze Data | Interpret Data | Report Data Click Analyze > General Linear Model > Repeated measures... on the top menu, as shown below: Published with written permission from SPSS Statistics, IBM Corporation. You will be presented with the Repeated Measures Define Factor(s) dialogue box, as shown below: Published with written permission from SPSS Statistics, IBM Corporation. Explanation: This dialogue box is where you inform SPSS Statistics that the three variables – crp_pre, crp_mid and crp_post – are three levels of the within-subjects factor, time. Without doing this, SPSS Statistics will think that the three variables are just that, three separate variables. In the Within-Subject Factor Name: box, replace "factor1" with a more meaningful name for your within-subjects factor. For example, we replaced "factor1" with "time" because this is the name of our within-subjects factor (i.e., time). Next, enter the number of levels of your within-subjects factor into the Number of Levels: box. For example, our within-subjects factor, time, has three levels, representing the three time points when our dependent variable, CRP, was measured (i.e., pre-intervention, crp_pre, mid-intervention, crp_mid, and post-intervention, crp_post). Therefore, we entered "3" into the Number of Levels: box, as shown below: Published with written permission from SPSS Statistics, IBM Corporation. Click on the button and you will be presented with the following screen: Published with written permission from SPSS Statistics, IBM Corporation. In the Measure Name: box, enter a name that reflects the name of your dependent variable. Since our dependent variable is CRP, we entered "CRP", as shown below: Published with written permission from SPSS Statistics, IBM Corporation. Click on the button and you will get the following screen: Published with written permission from SPSS Statistics, IBM Corporation. Click on the button and you will be presented with the Repeated Measures dialogue box, as shown below: Published with written permission from SPSS Statistics, IBM Corporation. Transfer crp_pre, crp_mid and crp_post into the "_?_(1,CRP)", "_?_(2,CRP)" and "_?_(3,CRP)" placeholders respectively in the Within-Subjects Variables (time): box, by highlighting all the variables in the left-hand box (by clicking on them whilst holding down the shift-key), and then clicking on the top button. You will end up with the following screen: Published with written permission from SPSS Statistics, IBM Corporation. Click on the button. You will be presented with the Repeated Measures: Profile Plots dialogue box, as shown below: Published with written permission from SPSS Statistics, IBM Corporation. Transfer the within-subjects factor, time, from the Factors: box into the Horizontal Axis: box by clicking on the top button. You will end up with the following screen: Published with written permission from SPSS Statistics, IBM Corporation. Click on the button. This will transfer "time" from the Horizontal Axis: box to the Plots: box, as shown below: Published with written permission from SPSS Statistics, IBM Corporation. Click on the button and you will be returned to the Repeated Measures dialogue box. Click on the button and you will be presented with the Repeated Measures: Options dialogue box, as shown below: Published with written permission from SPSS Statistics, IBM Corporation. Transfer time from the Factor(s) and Factor Interactions: box to the Display Means for: box using the button. This will activate the Compare main effects checkbox (i.e., it will no longer be greyed out). Tick this checkbox and select from the drop-down menu under Confidence interval adjustment:. Next, in the –Display– area, tick the Descriptive statistics and Estimates of effect size checkboxes. You will be presented with the following screen: Published with written permission from SPSS Statistics, IBM Corporation. Click on the button and you will be returned to the Repeated Measures dialogue box. Click on the button. This will generate the output. SPSS Statistics generates quite a few tables in its repeated measures ANOVA analysis. In this section, we show you only the main tables required to understand your results from the repeated measures ANOVA. For a complete explanation of the output you have to interpret when checking your data for the five assumptions required to carry out a repeated measures ANOVA, see our enhanced guide. However, in this "quick start" guide, we go through the main tables in turn: The Within-Subjects Factors table reminds us of the groups of our independent variable (called a "within-subject factor" in SPSS Statistics) and labels the time points 1, 2 and 3. We will need these labels later on when analysing our results in the Pairwise Comparisons table. Take care not to get confused with the "Dependent Variable" column in this table because it seems to suggest that the different time points are our dependent variable. This is not true – the column label is referring to fact that the dependent variable "CRP" is measured at each of these time points. Published with written permission from SPSS Statistics, IBM Corporation. Descriptive Statistics Table The Descriptive Statistics table simply provides important descriptive statistics for this analysis, as shown below: Published with written permission from SPSS Statistics, IBM Corporation. Tests of Within-Subjects Effects Table The Tests of Within-Subjects Effects table tells us if there was an overall significant difference between the means at the different time points. Published with written permission from SPSS Statistics, IBM Corporation. From this table we are able to discover the F value for the "time" factor, its associated significance level and effect size ("Partial Eta Squared"). As our data violated the assumption of sphericity, we look at the values in the "Greenhouse-Geisser" row (as indicated in red in the screenshot). We can report that when using an ANOVA with repeated measures with a Greenhouse-Geisser correction, the mean scores for CRP concentration were statistically significantly different (F(1.296, 11.663) = 26.938, p < .0005). Pairwise Comparisons Table The results presented in the previous table informed us that we have an overall significant difference in means, but we do not know where those differences occurred. This table presents the results of the Bonferroni post hoc test, which allows us to discover which specific means differed. Remember, if your overall ANOVA result was not significant, you should not examine the Pairwise Comparisons table. Published with written permission from SPSS Statistics, IBM Corporation. Looking at the table above, we need to remember the labels associated with the time points in our experiment from the Within-Subject Factors table. This table gives us the significance level for differences between the individual time points. We can see that there was a statistically significant difference in CRP concentration pre-intervention compared to 3 months into the intervention (p < .0005), and from pre-intervention to post-intervention (p = .001), but no significantly significant difference from 3 months into the intervention compared to post-intervention (p = .054). From the "Mean Difference (I-J)" column we can see that CRP concentration was significantly reduced at this time point. It is also possible to run comparisons between specific time points that you decided were of interest before you looked at your results. For example, you might have expressed an interest in knowing the difference in CRP concentration between the pre- and post-intervention time points. This type of comparison is often called a planned contrast or a planned simple contrast. However, you do not have to confine yourself to the comparison between two time points only. You might have had an interest in understanding the difference in CRP between the pre-intervention time point and the average of the mid- and post-intervention time points. This is called a complex contrast. All these types of planned contrast are available in SPSS Statistics. In our enhanced guide we show you how to run contrasts in SPSS Statistics using syntax and how to interpret and report the results. In addition, we also show how to "trick" SPSS Statistics into applying a Bonferroni adjustment for multiple comparisons which it would otherwise not do. Profile Plot This plot is the last element to this analysis. We are only including it so that you can see some of the limitations of doing so in its current format. You can change many features/properties of a graph's axes using SPSS Statistics. This is important because these profile plots always tend to exaggerate the differences between means by choosing a y-axis range of values that is too narrow. In this case, it is known that most people have CRP concentrations ranging from 0 to 3, so the profile plot that you should produce should take this into consideration. However, this plot can be useful in gaining an easy understanding of the tabular results. Published with written permission from SPSS Statistics, IBM Corporation. SPSS Statistics Reporting the Output A repeated measures ANOVA with a Greenhouse-Geisser correction determined that mean CRP concentration differed statistically significantly between time points (F(1.298, 11.663) = 26.938, P < 0.0005). Post hoc analysis with a Bonferroni adjustment revealed that CRP concentration was statistically significantly decreased from pre-intervention to three months (0.39 (95% CI, 0.24 to 0.54) mg/L, p < .0005), and from pre-intervention to post-intervention (0.68 (95% CI, 0.34 to 1.02) mg/L, p = .001), but not from three months to post-intervention (0.29 (95% CI, -0.01 to 0.59) mg/L, p = .054). In our enhanced repeated measures ANOVA guide, we show you how to write up the results from your assumptions tests, repeated measures ANOVA and post hoc results if you need to report this in a dissertation/thesis, assignment or research report. We do this using the Harvard and APA styles. You can learn more about our enhanced content on our Features: Overview page.

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